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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,121	06/27/2003	Setsuyuki Takeuchi	AK-T-420XX	6700
207	7590	04/29/2005	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EWALD, MARIA VERONICA	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/609,121	Applicant(s) TAKEUCHI ET AL.	
	Examiner Maria Veronica D. Ewald	Art Unit 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hume, et al. in view of Swenson, et al.

Hume, et al. teaches an injection molding system, which includes an article formation cavity and a melt transport mechanism. In the referenced molding system, the article formation cavity is curved and at its outer edge is bordered by a gate which opens and closes to allow or deter the movement of the melt material from the injection mechanism to the cavity itself (column 9, lines 55 – 56, item 16 – figure 1, item 66 – figure 3A). This reads on a cavity mold, as described by the applicant, which has a gate of a sprue of a cavity in a concave formed in a bottom thereof, a peripheral portion of the gate being formed into a flat face. Furthermore, the melt transport means is comprised of a main nozzle body, formed of steel, that is substantially cylindrical (column 10, lines 5 – 6). This reads on the applicant's claim that the nozzle body be made of steel. There are first and second counterbores within the bushing body which surround a passageway for the melt material (column 10, lines 7 – 8). This reads on a nozzle body having an opening formed in the end face of the nozzle. Hume, et al.

further teaches that the nozzle ends in a flat face and the bushing body abuts the gate, which leads to the curved cavity mold (column 9, line 55, items 26 and 68 – figure 4). This reads on a nozzle having an end face formed into a flat face, the mold being arranged on the cavity mold such that the nozzle is inserted into the concave.

Hume, et al., however, does not teach the use of a cylindrical tip formed of metal having a lower thermal conductivity than the nozzle body.

In a method for injecting melt material into a cavity using an injection molding system, Swenson, et al. teaches an injecting molding nozzle, which is comprised of a main body and a nozzle piece. Melt flows through the bore within the nozzle, which ends in the nozzle piece. The nozzle piece is constructed of two pieces, an inner piece and an outer piece. The outer piece is formed of a low thermally conductive material such as titanium alloy (column 4, line 41 – 44). This reads on the applicant's claim that the nozzle tip be formed of titanium alloy having a lower thermal conductivity than the steel used for the mold body. The use of the titanium minimizes heat transfer from the inner nozzle piece and the nozzle body to the cooled mold (column 4, line 44). The nozzle piece ends in a flat end face, which extends towards the surface of the mold and abuts the gate of the cavity (column 2, line 67, column 3, line 1, column 4, lines 33 – 34, item 22 – figure 1). Furthermore, the reference teaches that the nozzle piece sits on a shoulder of the nozzle body (column 4, line 28). This reads on the applicant's claim that the nozzle include a nozzle body having an opening formed in the end face of the nozzle, a short cylindrical tip with a flat end face and a nozzle orifice in the center of the end face, the tip being slidably fitted in the opening formed in the end face of the nozzle

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in such a way that its end face is protruded from the end face of the nozzle and directly touches the gate of the sprue of the cavity.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the injection system of Hume, et al. to incorporate the nozzle piece of Swenson, et al. in order that the nozzle body and the nozzle tip be formed from dissimilar metals of steel and titanium alloy, respectively, for the purpose of reducing heat transfer from the nozzle body to the cooled mold as taught by Swenson, et al. (column 4, lines 43 – 44).

14. Claims 2 and 4 are rejected over Hume, et al. in view of Swenson, et al. and further in view of Ciccone. Hume, et al. and Swenson, et al. teach the characteristics described previously, but do not teach a nozzle tip with an inner peripheral wall face being formed in a conical face having the same angle as the conical end portion of a needle mounted in the nozzle and being fitted on the end portion of the needle.

In a method for injecting melt material into a cavity mold using a hot runner mold, Ciccone teaches the use of a nozzle insert that is in the form of a direct sprue nozzle tip with a central passage that communicates with the central bore inlet portion (column 2, lines 55 – 56). The nozzle insert tapers conically to mirror the conical end portion of a needle mounted in the nozzle (item 34, 38 – figure 3).

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the injection system of Hume, et al. and Swenson, et al. such that the nozzle piece tapers conically to mirror the angle of the needle mounted in the nozzle tip

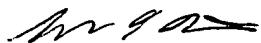
for the purpose of ensuring that the tip surface is kept small to avoid heat loss as taught by Ciccone, et al. (column 1, line 27).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 571-272-1137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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